Pathology Laboratories and Cancer Surveillance
A New Relationship using National Standards?

Missy Jamison, MPH

Overview

- Background
  - Cancer surveillance
  - Pathology laboratories
  - Changes in the environment
- Collaboration with pathologists
- Challenges and opportunities
- Next steps

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Background

Public Health Impact

- Estimated cancer burden in 2006
  - Second leading cause of death: 556,900
  - Estimated new cancers: 1,400,000
  - Direct medical costs: $210 billion
- Cancer is a reportable disease
  - Reported to state health departments
  - Sent to the National Program of Cancer Registries (NPCR) at CDC

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Cancer Surveillance

- CDC's National Program of Cancer Registries (NPCR)
  - Contributes data for 45 states, DC and 3 territories
- NCI's Surveillance Epidemiology and End Results Program (SEER)
  - Contributes data for 5 states and 6 sub-state regions
- North American Association of Central Cancer Registries (NAACCR)
  - Promotes standards

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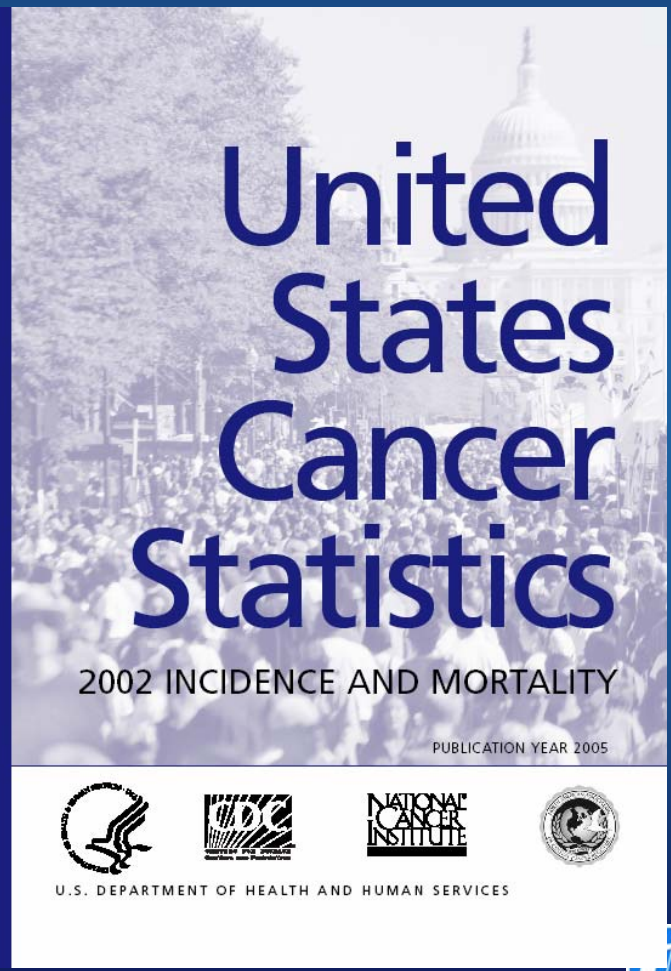
National Cancer Statistics

- Covers 96% of US population for incidence, 100% for mortality
- State, regional, and national data
- Rates for whites, blacks, Asians/Pacific Islanders, Native Americans, and Hispanics
- http://www.cdc.gov/cancer/npcr/uscs



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Data for Cancer Surveillance

- Cancer traditionally diagnosed in hospitals and reported to public health departments
  - Public health departments report to CDC
- Reporting from hospitals has worked well
  - Vocabulary defined by cancer community
  - Data reported electronically in a flat file format
  - Cancer registries and NPCR read and process these files

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Data from Pathology Labs

- > 90% of cancers diagnosed in pathology laboratories
- However…
  - Path reports traditionally in a narrative format
    - Dictated as the pathologist examines the specimen
  - Traditionally relied upon as a secondary or confirmatory source for a cancer diagnosis
  - Challenges to use in a computer environment

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Changes in the Environment

- Movement of cancer care from hospitals to out-patient settings
- Changes in public health reporting
  - Public Health Information Network (PHIN)
  - Desire for more current data than available under the existing system
- The College of American Pathologists (CAP)
  - Created cancer checklists
  - Encoded with SNOMET CT

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Changes in the Environment

- The American College of Surgeons
  - Accredits hospital cancer programs
  - Starting January 2004
    - Require that 90% of pathology reports collect the CAP checklist data
- Combination of events
  - Need for new reporting source of cancer data to state cancer registries
  - A new reporting format provided by CAP

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Traditional Pathology Report

- Colon, right, segmental resection to include appendix and ileum
- Micro: Mod diff colonic adenoca (2 cm)
- Mucinous adenocarcinoma invading through the bowel wall extending through muscular propria into overlying serosal surface of the bowel. 0/12 LNs involved. Margins are free of tumor. All of twenty-two lymph nodes are free of tumor.

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CAP Colon and Rectum Checklist

COLON AND RECTUM: Resection

Patient name:

Surgical pathology number:

MACROSCOPIC

Tumor Site

___ Cecum
_X_ Right (ascending) colon
___ Hepatic flexure
___ Transverse colon
___ Splenic flexure
___ Left (descending) colon
___ Sigmoid colon
___ Rectum
___ Not specified

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Collaboration with Pathologists

NPCR Projects using Pathology Data

- Reporting Pathology Protocols I and II
- Veterans Administration Medical Center Collaboration
- NAACCR E-Pathology Transmission Working Group

Reporting Pathology Protocols (RPP)

- Purpose of RPP
  - Take advantage of the changes in the environment
  - Use the SNOMED CT encoded CAP cancer checklists to promote an exchange of data between
    - Pathology labs
    - NPCR cancer registries
  - Promote and evaluate use of PHIN standards

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Reporting Pathology Protocols (RPP)

- In 2001, NPCR funded
  - California and Ohio for RPP1
  - Cancers of the colon and rectum
- In 2004, NPCR funded
  - California, Maine, and Pennsylvania for RPP2
  - Cancers of the breast, prostate, and melanoma of the skin

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Veterans Administration Medical Center (VAMC) Project

- Drs. V. J. Varma and Theresa W. Gillespie at the Atlanta VAMC funded for
- A two year project starting FY 2006
  - Use SNOMED CT Encoded CAP Checklists
  - Top 5 cancers
    - Lung, breast, prostate, colon and rectum, pancreas
  - Store values in a database in the pathology lab

VAMC Project Goals

- Evaluate CAP checklist use in an active pathology lab
- Compare paper based operation with electronic operation
- Evaluate collaboration with the cancer registry

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NAACCR E-Path Transmission

- A working group of NPCR-funded state staff and pathology lab software vendors
- Recently completed a users guide
  - PHIN standards to transmit text version of pathology report
  - LOINC, SNOMED and HL7

NAACCR E-Path

- Now, focused on the CAP Checklists
- Set PHIN vocabulary and messaging standards to:
  - Capture checklist data at the pathology lab
  - Map between SNOMED codes and NAACCR data items
  - Incorporate into cancer database at the state health department

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Challenges and Opportunities

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Opportunities

- Reduce coding from narrative text
- Capture intent of pathologists
- Improve rapid case-ascertainment systems
- Create more complete case reports
- Improve completeness of reporting
- Move toward PHIN standards

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HL7 Issues

- Location of Checklist Identifier
- Nested questions
- Multiple primaries – message structure
- Use of conformance testing software

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Checklist Identifier Location

- Important piece of information about primary site and surgical procedure
- RPP1 used OBR 44
- RPP2 discussed OBR 4 and OBR 20
  - OBR 4 holds the Universal Service Identifier
  - OBR 20 is more of a filler field
  - RPP2 decided to use OBR 20
- NAACCR E-path decided to use the first OBX

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Nested Questions

- **SPECIMEN TYPE *[R-00254, 371439000] Specimen type (observable entity)***
- ___ Excision, ellipse *[G-81FD, 396353007] Specimen from skin obtained by elliptical excision (specimen)*
- ___ Excision, wide *[G-81FE, 396354001] Specimen from skin obtained by wide excision (specimen)*
- ___ Excision, other (specify): ____ *[G-81FF, 396355000] Specimen from skin obtained by excision (specimen) (specify): ____ not coded*
- ___ Re-excision, ellipse *[G-8202, 396357008] Specimen from skin obtained by elliptical re-excision (specimen)*
- ___ Re-excision, wide *[G-8203, 396358003] Specimen from skin obtained by wide re-excision (specimen)*
- ___ Re-excision, other (specify): _____ *[G-8201, 396356004] Specimen from skin obtained by re-excision (specimen) (specify): ____ not coded*
- ___ Lymphadenectomy, sentinel node(s) *[R-003AF, 373193000] Lymph node from sentinel lymph node dissection (specimen)*
- _X_ Lymphadenectomy, regional nodes (specify): _axillary_ *[G-8204, 396359006] Lymph node from regional lymph node dissection (specimen) (specify): ____ not coded*
- ___ Other (specify): ____ *not coded*
- ___ Not specified *[G-8110, 119325001] Skin (tissue) specimen (specimen)*

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CWE With Repeating Segments

- _X_ Lymphadenectomy, regional nodes (specify): _axillary_ *[G-8204, 396359006] Lymph node from regional lymph node dissection (specimen) (specify): ____ not coded*
- **OBX|1|CWE|371439000^Specimen type (observable entity)^SCT^^^^^SPECIMEN TYPE||396359006^Lymph node from regional lymph node dissection (specimen)^SCT^^^^^^Lymphadenectomy, regional nodes (specify)~^^^^^^^^axillary|||||F**

Multiple Specimen/Cancers Scenarios

- One specimen to two or more cancers with the same primary site
- One specimen to two or more cancers with different primary sites
- Many specimens to two or more cancers with the same primary site
- Many specimens to two or more cancers with different primary sites

Multiple Primary - Structure

MSH/PID/PV1
ORC - Specimen
- OBR – Part **1** and Worksheet **1** (type)
  - OBX – Heading/Question and Value
  - OBX – " " " "
  - OBX – " " " "
- OBR – Part **1** and Worksheet **2** (type)
  - OBX – Heading/Question and Value
  - OBX – " " " "
  - OBX – " " " "
- OBR – Part **3** and Worksheet **3** (type)
  - OBX – Heading/Question and Value
  - OBX – " " " "
  - OBX – " " " "

Conformance Testing Software

- RPP2 using a messaging workbench to verify format and content of HL7 message
- Generates a lot of errors
  - Some are important and some are not
- Where is the community on this?

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Issues with Vocabulary

- Mapping between SNOMED and NAACCR codes
  - Laterality – maps easily
  - Tumor site – maps with one business rule
  - Histology – maps with multiple rules
- CAP checklists have text strings
  - SNOMET CT feels that these “Other” text strings violate the rules of SNOMED
  - An issue that has yet to be resolved

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Other Issues for the Collaboration

- CAP Checklists cover only 90% of all cancers
  - What about *in situ* cases
  - What about sites without a checklist
- Pathologists must stay current with recent trends in staging and treatment
  - Surveillance needs data for long term trends

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Issues for the Collaboration

- Development of checklists by CAP
  - Computerization a secondary goal
- Over 50 CAP cancer checklists
  - Assessment of each is time consuming
- Cost to pathology laboratory and state cancer registries
  - Changes to software are costly
  - Currently a charge for the SNOMED CT encoded checklists

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Next Steps

Role of Standards in Public Health

- Cancer has funded several projects to promote and assess the use of PHIN standards
- Increasingly important to be able to
  - Collect once, use multiple times
  - Use resources wisely
  - Have data available quickly
- Need to use common messaging formats and vocabularies

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Next Steps

- Work through issues of vocabulary and mapping
- Work through HL7 issues
- Implement checklists more quickly
- Integrate into cancer registry software
  - Abstract
  - Rapid Case-Ascertainment

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?? Questions ??

Contacts

- **Ken Gerlach**
  - **770-488-3008**
  - **kgerlach@cdc.gov**
- **Missy Jamison**
  - **770-488-3154**
  - **mjamison@cdc.gov**
- **National Program of Cancer Registries**
- **http://www.cdc.gov/cancer/**

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